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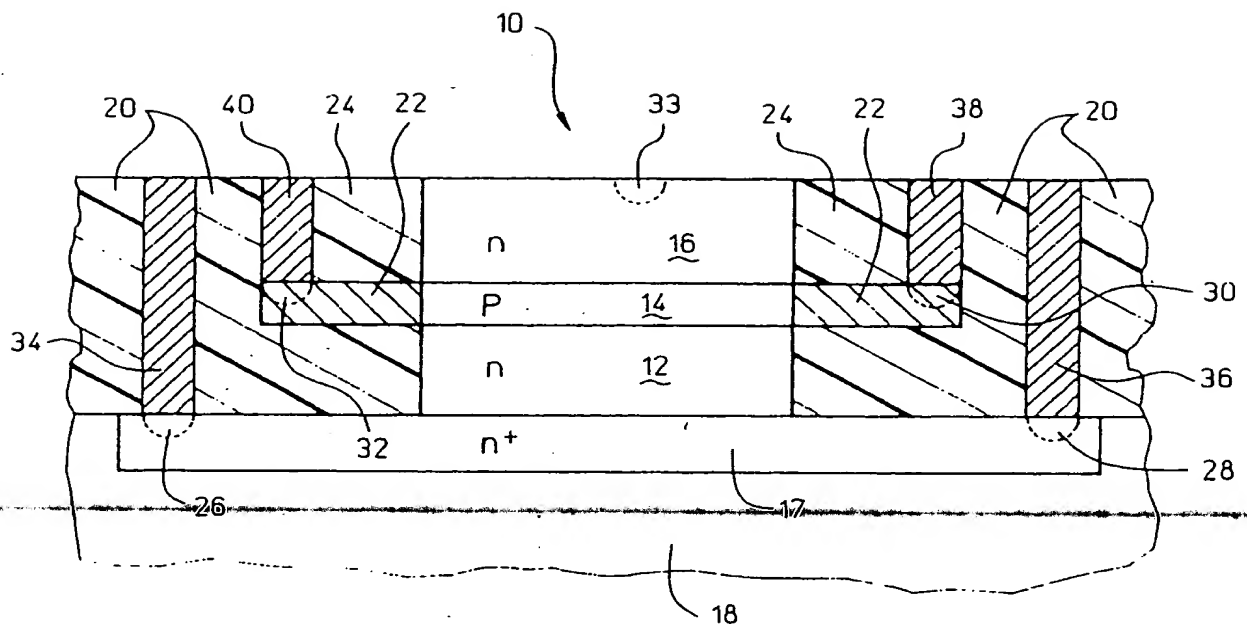
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(54) Method of fabricating an ultra-thin active region for high speed semiconductor devices.

(57) A method of fabricating a semiconductor device (10) to retard diffusion of a dopant from a center active region (14) into adjacent regions. The center active region is epitaxially formed by selectively increasing and decreasing an introduction of diffusion-suppressing material, preferably germanium, into a semiconductor material, preferably silicon, so that a vertical profile of the content of the diffusion-suppressing material is such that outdiffusion of a dopant is minimized. One embodiment of the tailoring is to increase the concentration of the diffusion-

suppressing material at both of the opposed sides of a base region of a bipolar transistor, thereby providing concentration peaks at the interfaces of the base region with collector (12) and emitter (14) regions. The concentration of germanium in a $\text{Si}_{1-x}\text{Ge}_x$ layer is such that the value x is within the range 0.08 to 0.35 and optimally within the range 0.15 to 0.31. The dopant, preferably boron, also has a tailored concentration profile to minimize outdiffusion. A thinner, more highly doped active region is thereby achieved.

EP 0 552 561 A3





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EUROPEAN SEARCH REPORT

Application Number
EP 92 31 1671

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	IEEE TRANSACTIONS ON ELECTRON DEVICES, vol.36, no.10, October 1989, NEW YORK US pages 2043 - 2064 S. S. IYER ET AL. 'Heterojunction bipolar transistors using Si-Ge alloys' * page 2053 - page 2057 * ---	1-6	H01L21/331 H01L21/20 H01L29/161 H01L29/73
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 May 1995	Examiner Visentin, A
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document			



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Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 31 May 1995	Examiner Visentin, A
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